

forecast, although forecasts of much colder weather were sent to such points as could be reached. Reports from Carson City were not received on January 28.

The general rains for both northern and southern California were forecast, and no adverse comment has been made upon the work of the service. Some complimentary letters have been received.

The frosts in southern California on the morning of January 30 were accurately forecast.—A. G. McAdie, Professor.

PORTLAND, OREG., FORECAST DISTRICT.

The first half of the month was mild and dry, but on the 19th a stormy period began which lasted almost uninterruptedly during the remainder of the month. There were no cold waves during the month.

Timely warnings were issued for all storms, and no important casualties, due to stress of weather, occurred. The Norwegian bark, *Prince Arthur*, was wrecked January 2, on the northwest Washington coast, with a loss of 18 lives. It is supposed that the captain made a mistake in his reckoning as the ship was steered into the breakers during the night.

Unusually high winds prevailed at times along the Washington coast. At North Head, a maximum wind velocity of 76 miles from the southeast occurred on the 29th, and 64 miles an hour from the southwest was reported on the 23d from Tatoosh Island.

The warm rains during the middle of the month caused streams in western Oregon to overflow their banks, and flood warnings were issued between the 22d and the 31st. These warnings were accurate and of great value to the people living near the submerged districts, as well as to mill men and those interested in river navigation.—E. A. Beals, Forecast Official.

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocity.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.										
I.....	6, a. m.	48	123	9, p. m.	27	80	3,050	3.5	871	36.3
II.....	8, p. m.	53	108	11, a. m.	32	65	2,900	2.5	1,160	48.3
III.....	11, a. m.	53	108	14, p. m.	32	81	2,550	3.5	729	30.4
IV.....	13, p. m.	44	116	16, a. m.	35	85	2,100	2.5	840	35.0
V.....	16, p. m.	53	108	20, p. m.	46	60	2,700	4.0	675	28.1
VI.....	21, a. m.	32	106	22, p. m.	28	83	1,550	1.5	1,033	43.0
VII.....	21, p. m.	53	108	25, a. m.	48	88	2,100	3.5	600	25.0
VIII.....	28, p. m.	38	122	1, a. m.*	32	65	3,500	3.5	1,000	41.7
Sums.....							20,450	24.5	6,908	287.8
Mean of 8 paths.....							2,556		864	36.0
Mean of 24.5 days.....									835	34.8
Low areas.										
I.....	1, a. m.	29	95	4, a. m.	46	60	2,300	3.0	767	32.0
II.....	2, p. m.	51	120	5, p. m.	30	82	2,400	3.0	800	33.3
III.....	5, a. m.	54	114	7, a. m.	46	60	3,450	4.5	767	32.0
IV.....	9, a. m.	35	112	9, a. m.	48	54	3,150	4.0	788	32.8
V.....	16, a. m.	48	89	12, a. m.	47	65	3,000	3.0	1,000	41.7
VI.....	18, p. m.	51	114	18, a. m.	47	65	1,225	2.0	612	25.6
VII.....	20, p. m.	51	120	22, a. m.	46	60	2,925	3.5	836	34.8
VIII.....	20, p. m.	51	120	24, a. m.	48	54	1,800	1.5	1,200	50.0
IX.....	21, p. m.	51	120	24, a. m.	38	85	3,300	3.5	943	39.3
X.....	24, a. m.	48	124	26, p. m.	46	87	2,350	2.5	940	39.2
	27, a. m.	39	120	30, p. m.	48	68	1,975	2.5	790	32.9
							2,900	3.5	828	34.5
Sums.....							30,775	36.5	10,271	428.0
Mean of 12 paths.....							2,565		856	35.7
Mean of 36.5 days.....									843	35.1

* February.

For graphic presentation of the movements of these highs and lows see Charts I and II.—Geo. E. Hunt, Chief Clerk, Forecast Division.

RIVERS AND FLOODS.

There was some slight southern extension of the ice limit during January, but not so great as during the corresponding period of 1902. There was also a considerable increase in the thickness of the ice in the rivers of the northern districts, Moorhead, Minn., reporting 32 inches, as compared with 18 inches at the close of the preceding month.

Nothing of special interest was noted except in the rivers of South Carolina and the north Pacific district. In the former State the rivers were above the normal winter stages during the entire month, and warnings were issued on the 4th for danger-line stages in the Wateree, Pedee, and Congaree rivers. The stages reached in the two former rivers were from 2 to 3 feet above the danger lines, but no damage was reported.

The following report of the flood in the Willamette River of Oregon was prepared by Mr. E. A. Beals, Official in Charge of the Weather Bureau office at Portland, Oreg.:

Up to the 18th the weather in Oregon during January, 1903, was not especially noteworthy, but on that date a rainy spell, accompanied by warm weather, set in, which lasted a full week. The rainfall was very heavy up to the 25th, after which date the weather turned colder and most of the precipitation occurring later was in the form of snow.

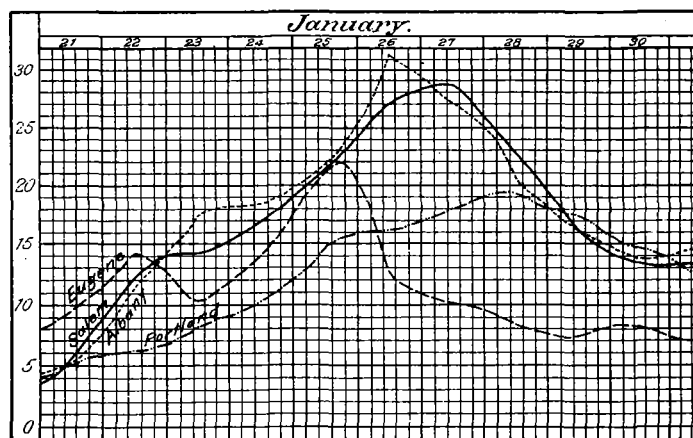
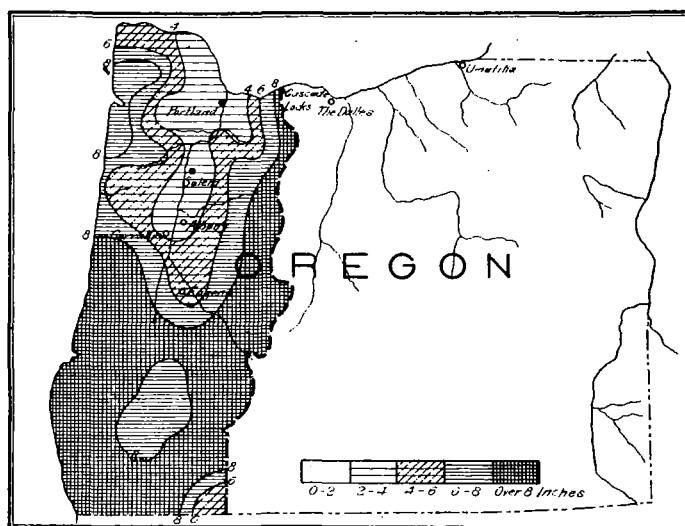


FIG. 1.—Precipitation in western Oregon from January 17 to 25, 1903, inclusive.

The rains were heaviest in the southern half of western Oregon, and on the 24th a number of stations in this section reported amounts as high as 3 inches or more, while for the period between January 17 to 24, inclusive, the rainfall ranged from 8.62 inches at Drain, to 14.29 inches at Buckhorn Farm, near Kerby. In the lower portion of the Willamette Valley the rainfall was considerably lighter, being generally between 3 and 4 inches.

The streams in western Oregon began to rise rapidly on the 21st and the evening weather report contained the following announcement:

“Heavy rains have fallen in southern Oregon, and the river at Eugene